AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135

FIG. 1

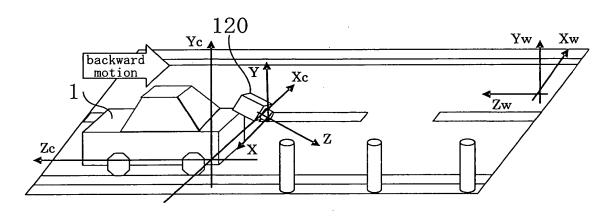
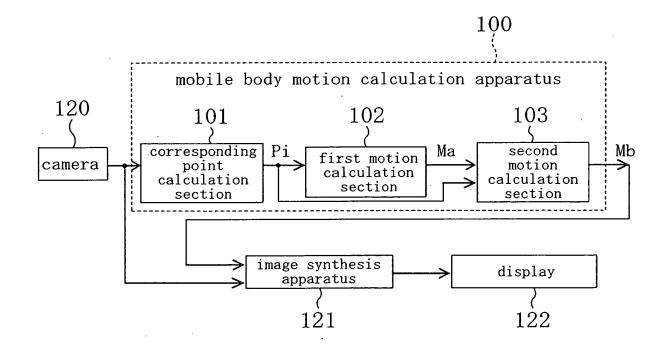


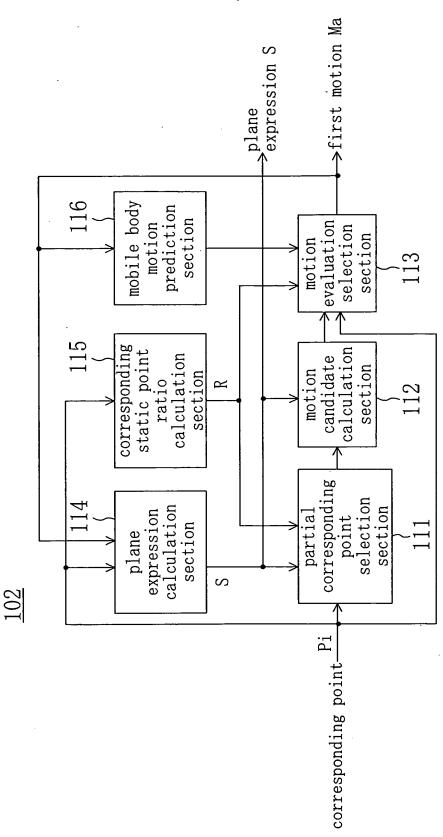
FIG. 2



Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135





7IG. 3

Title: METHOD AND APPARATUS FOR CALCULATING MOTION OF MOBILE BODY, AND NAVIGATION SYSTEM

Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

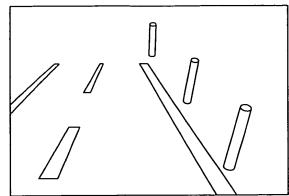
3/14

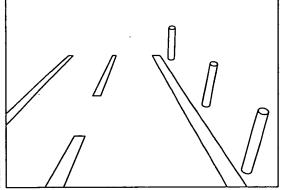
FIG. 4

(a) image (time t-1)

3 3 3 5 s

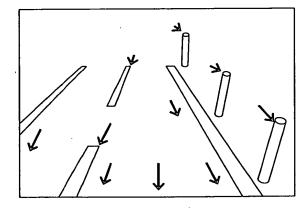
(b) image (time t)

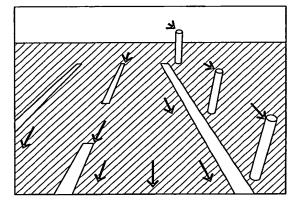




(c) corresponding point  $(t-1 \rightarrow t)$ 

(d) road surface plane range

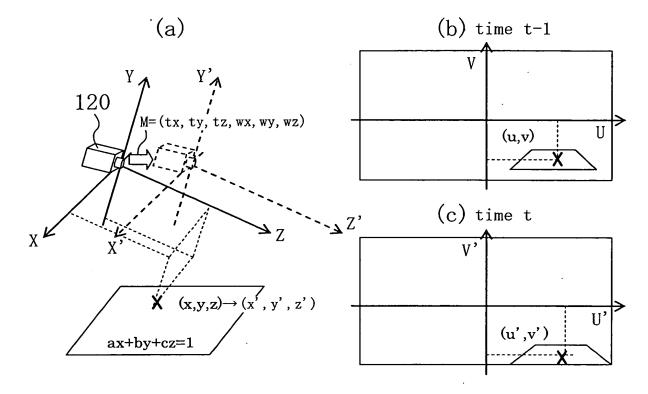




AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135

FIG. 5



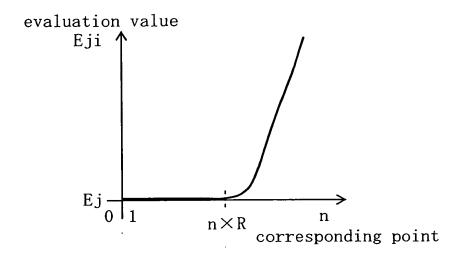
10/540135

5/14

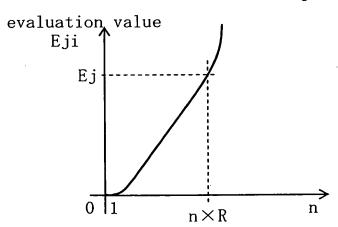
FIG. 6

(a)

correct camera motion Mj



(b) incorrect camera motion Mj



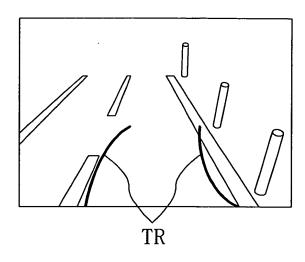
corresponding point

Title: METHOD AND APPARATUS FOR CALCULATING MOTION OF MOBILE BODY, AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

5

10/540135

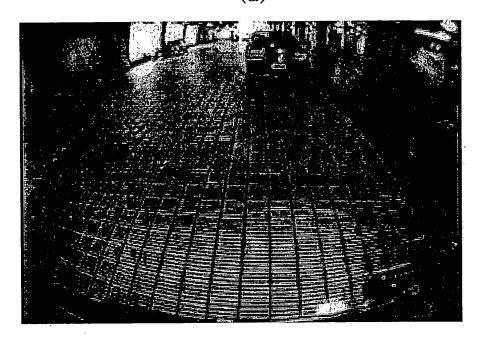
FIG. 7

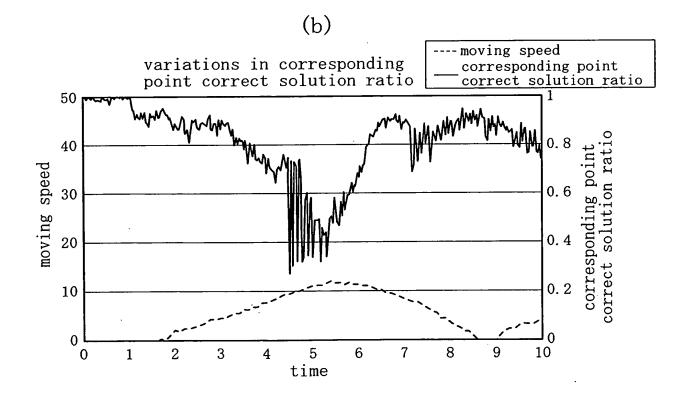


AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135

7/14 FIG. 8 (a)





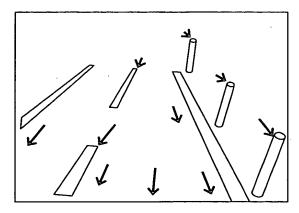
## **BEST AVAILABLE COPY**

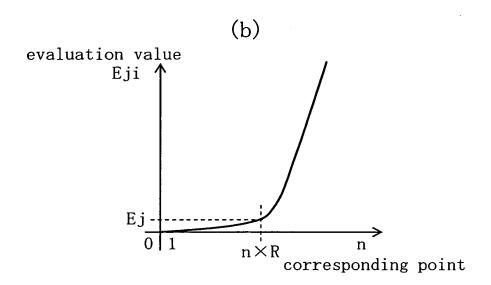
10/540135

8/14

FIG. 9
(a)

road surface is inclined



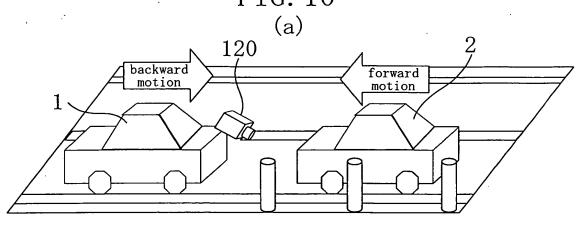


AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135

9/14

FIG. 10



(b)

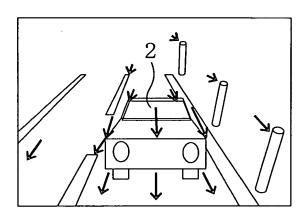
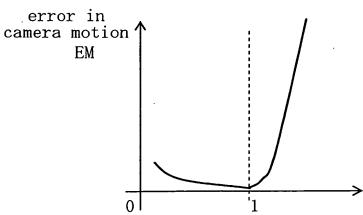


FIG. 11



ratio of corresponding static point ratio to true value (R/Rtrue)

AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

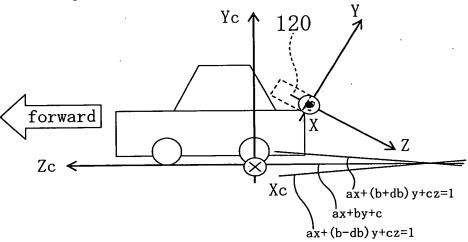
10/540135

10/14

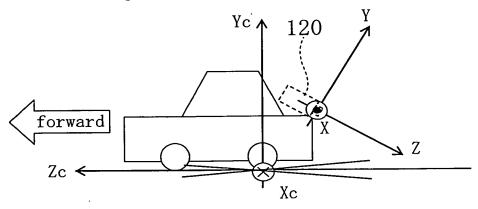
## FIG. 12

(a)

viewpoint coordinate system is used as reference



(b)
middle point of rear wheel which contacts
ground is used as reference



Title: METHOD AND APPARATUS FOR CALCULATING MOTION OF MOBILE BODY, AND NAVIGATION SYSTEM

AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135

FIG. 13

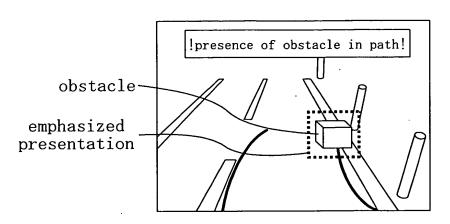
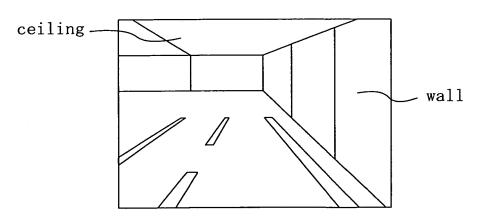
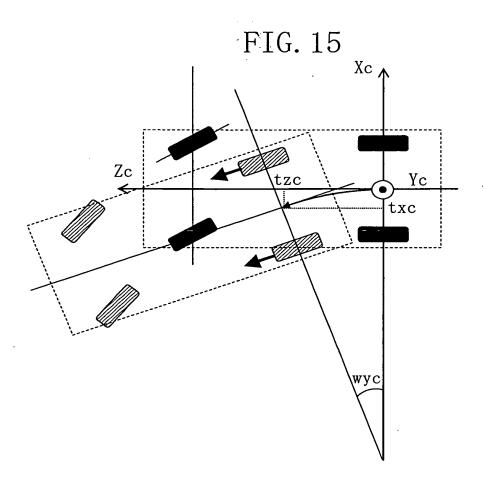


FIG. 14 image of indoor parking lot

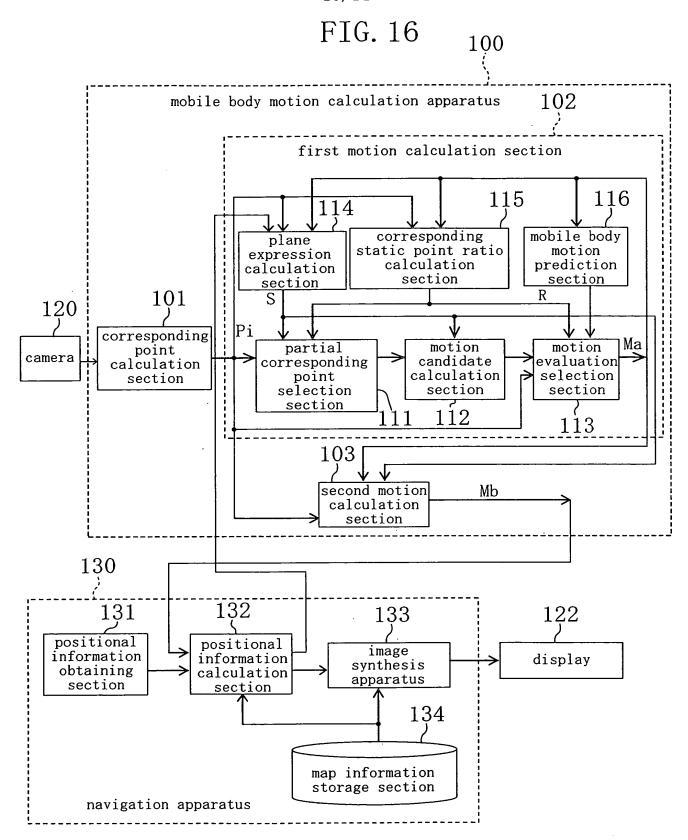


AND NAVIGATION SYSTEM Inventor(s): Kunio NOBORI et al Atty. Ref.: 5077-244/NP

10/540135



10/540135



10/540135

14/14

FIG. 17

trajectory of moving vehicle calculated
from images (world coordinate system)

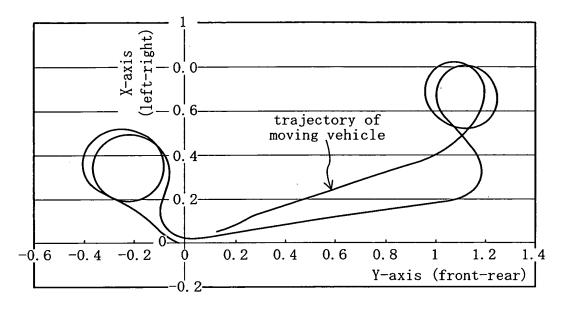


FIG. 18

